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L23: Entry 74 of 154 File: JPAB May 19, 1998

PUB-NO: JP410130571A
DOCUMENT-IDENTIFIER: JP 10130571 A
TITLE: COATING MATERIAL COMPOSITION

PUBN-DATE: May 19, 1998

INVENTOR-INFORMATION:
NAME COUNTRY
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INT-CL (IPC): C09 D 167/00; B05 D 7/14; B05 D 7/24

ABSTRACT:

PROBLEM TO BE SOLVED: To obtain the subject composition exhibiting specific ranges of dynamic modulus and molecular weight between bridges and capable of forming a coating film satisfying processability at low temperature, coating film hardness and blocking resistance by including a specific polyester resin and a crosslinking agent.

SOLUTION: This coating material composition comprises (A) 20-80 pts.wt. polyester resin having 8,000 to 18,000 number-average molecular weight, ≥-20°C and <5°C glass transition temperature and 5-40mgKOH/g hydroxyl value and (B) 5-65 pts.wt. polyester resin having 13,000 to 30,000 number-average molecular weight, 5-35°C glass transition temperature and 2-25mgKOH/g hydroxyl value and (C) 15-35 pts.wt. melamine resin crosslinking agent. The composition contains, as necessary, (D) a curing catalyst in an amount of ≤2.0 pts.wt. expressed in terms of acid amount based on 100 pts.wt. total amount of components A to C. Dynamic modulus (at 100°C) of cured coating film obtained from the composition is ≥ 2.0×108dyne/cm2 and molecular weight between bridges is 300-1,300.

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low hi low

hydroxyl values are too low.
present claims require ~ 75-400 mg KOH/g

FD = 10/17/03

Amendments to the Claims

1. (Currently amended) A curable coating composition useful in providing a chip resistant two-tone finish comprising:

(a) a ~~plurality~~ **blend** of hydroxyl-functional polyester resins, **each of** said resins having an average hydroxyl functionality of at least 2.1, a hydroxyl number from about 75 to 400 mg KOH/g, a number average molecular weight from about 1,000 to 10,000, and an acid number from about 1 to 30, **wherein said blend comprises at least one hydroxyl-functional polyester resin having a glass transition temperature of greater than -15°C and at least one hydroxyl-functional polyester resin having a glass transition temperature of equal to a less or than -15°C**;

(b) a curing agent; and,

(c) a barium sulfate component included in an amount from about 10 to 50 parts by weight, based upon total weight of binder solids;

wherein said curable coating composition has holdout capable characteristics **with a basecoat applied over said curable coating in a wet on wet manner**.

2. (Currently amended) The coating composition of claim 1 wherein **said blend consists of** a first hydroxyl-functional polyester resin ~~has~~ **having** a glass ~~transition~~ temperature greater than -15°C, and a second hydroxyl-functional polyester resin ~~has~~ **having** a glass transition temperature equal or less than -15°C.

3. (Original) The coating composition of claim 2 wherein said first hydroxyl-functional polyester resin has a glass transition temperature from about 40 to -15°C, and a second hydroxyl-functional polyester resin has a glass transition temperature from about -15 to -60°C.

4. (Original) The coating composition of claim 3 wherein said first hydroxyl-functional polyester resin has a glass transition temperature from about 10 to -

10°C, and a second hydroxyl-functional polyester resin has a glass transition temperature from about -20 to -40°C.

5. (Original) The coating composition of claim 1 wherein each of said hydroxyl-functional polyester resins comprises a tri- or higher-functional poly-alcohol which is selected from the group consisting of 1,1,1-trimethylol propane, 1,1,1-trimethylol ethane, 1,2,3- trimethylol propane, and pentaerythritol.

6. (Original) The coating composition of claim 1 wherein each of said hydroxyl-functional polyester resins has an average hydroxyl functionality from about 2.2 to 4.8.

7. (Original) The coating composition of claim 6 wherein each of said hydroxyl-functional polyester resins has an average hydroxyl functionality from about 2.5 to 3.0.

8. (Original) The coating composition of claim 1 wherein each of said hydroxyl-functional polyester resins has a number average molecular weight from about 1,000 to 5,000.

9. (Original) The coating composition of claim 1 wherein each of said hydroxyl-functional polyester resins has a hydroxyl number from about 100 to 250 mg KOH/g.

10. (Original) The coating composition of claim 1 wherein said barium sulfate component comprises from about 20 to 40 parts by weight based on the total weight of binder solids.

11. (Original) The coating composition of claim 10 wherein said barium sulfate component comprises from about 28 to 40 parts by weight based on the total weight of binder solids.

12. (Original) The coating composition of claim 1 wherein said curing agent is a melamine formaldehyde resin comprising a monomeric melamine, a polymeric melamine, or any mixture thereof.

13. (Original) The coating composition of claim 12 wherein said melamine formaldehyde resin comprises from about 10 percent to 50 percent by weight, based on the total weight of binder solids.

14. (Original) The coating composition of claim 13, wherein said melamine resin comprises from about 15 percent to 40 percent by weight, based on the total weight of binder solids.

15. (Original) The coating composition of claim 14 wherein said melamine resin comprises from about 20 percent to 35 percent by weight, based on the total weight of binder solids.

16. (Original) The coating composition of claim 1 wherein said curing agent is a blocked or unblocked polyisocyanate resin, or any mixture thereof.

17. (Original) The coating composition of claim 16 wherein said polyisocyanate comprises one or more trimers selected from the group consisting of hexamethylene diisocyanate, isophorone diisocyanate, meta-tetramethylxylylene diisocyanate, and a combination thereof.

18. (Original) The coating composition of claims 1 further comprising a flow-modifying agent.

19. (Original) The coating composition of claim 1 further comprising an oleophillic zircoaluminate coupling agent.

20. (Original) The coating composition of claim 1 further comprising a flow modifying resins.

21. (Original) The coating composition of claim 1 further comprising magnesium silicate filler component.

22. (Original) The coating composition of claim 21, wherein said magnesium silicate pigment comprises from about 1% to 5% parts by weight, based on the total weight of binder solids. NB

23. (Original) The coating composition of claim 1 further comprising a pigment component.

24. (Original) The coating composition of claim 1 further comprising an organically modified clay filler component.

25. (Original) The coating composition of claim 1 further comprising 0.1 to 2.0% by weight, based on the total weight of the binder, of blocked acid catalyst.

26. (Original) The coating composition of claim 25 wherein said blocked acid catalyst comprises an organic sulfonic acid blocked with a hydroxyl functional alkyl amine.

27. (Original) The coating composition of claim 1 further comprising 0.1% to 10% by on the total weight of binder solids, of hindered amine stabilizers and ultraviolet light absorbers.

28. (Withdrawn) A method for coating a substrate with the coating composition of claim 1 to achieve a multiple color, chip resistant, finish, comprising:

(a) applying the coating composition of claim 1 to an accent color area of a substrate;

(b) applying a second, different primer surfacer coating to a non-accent area surface of a substrate;

(c) applying an accent color basecoat coating wet-on-wet over the aforementioned coating composition of claim 1 in the accent color area of a substrate;

(d) curing the above composite coating in a first bake;

(e) covering the cured accent color area with a protective membrane;

(f) applying a main color basecoat layer to the surface of a substrate;

(g) removing said protective membrane from said cured accent color area;

(h) applying over said main color basecoat layer and said cured accent color area, a clear coat composition; and

(i) curing the finish in a second bake.

29. (Withdrawn) A method for coating a substrate with the coating composition of claim 1 to achieve a multiple color, chip resistant, finish, comprising:

(a) applying the coating composition of claim 1 to the surface of a substrate;

(b) applying an accent color basecoat coating wet-on-wet over the aforementioned coating composition of claim 1 in the accent color area of a substrate;

(c) curing the above composite coating in a first bake;

(d) covering the cured accent color area with a protective membrane;

(e) applying a main color basecoat layer to the surface of a substrate;

(f) removing said protective membrane from said cured accent color area;

(g) applying over said main color basecoat layer and said cured accent color area, a clear coat composition; and

(h) curing the finish in a second bake.

30. (Withdrawn) The method of claims 28 or 29 wherein said substrate is a transportation vehicle substrate.

31. (Withdrawn) A substrate coated with the composition of claim 1.

32. (Withdrawn) A substrate having a multi-layer coating comprising a pigmented primer coating of the composition of claim 1, a base coating comprising a pigmented coating composition, and a clear top-coating.

33. (New) The coating composition of claim 1, wherein each of said hydroxyl-functional polyester resins are the esterification product of an alkylene glycol, a triol, a polyol, and a dicarboxylic acid or anhydride or an ester of a dicarboxylic acid.